COVERAGE NAME: CALW22A

COVERAGE AREA: Statewide

COVERAGE DESCRIPTION:

The California Watershed Map (CALWATER version 2.2) is a set of standardized watershed boundaries meeting standardized delineation criteria. The hierarchy of watershed designations consists of six levels of increasing specificity: Hydrologic Region (HR), Hydrologic Unit (HU), Hydrologic Area (HA), Hydrologic Sub-Area (HSA), Super Planning Watershed (SPWS), and Planning Watershed (PWS). The primary purpose of Calwater is the assignment of a single, unique code to a specific watershed polygon. While there are 7022 polygons in the ARC/INFO coverage, there are actually fewer watershed codes. This is due to cases of multiple polygons bearing the same watershed code (Channel Islands, split polygons due to other boundary integration, e.g. ground water basins). Another confusing factor is that not all Hydrologic Units are subdivided into Hydrologic Areas, not all Hydrologic Areas are subdivided into Hydrologic Sub-Areas, and so on. Therefore, a nominal count of watershed codes in Calwater 2.2 is:

Hydrologic Regions:	10
Hydrologic Units:	190
Hydrologic Areas:	522
Hydrologic Sub-Areas:	655
Super Planning Watersheds:	1623
Planning Watersheds:	6271

Primary purposes for Calwater 2.2 include but are not limited to mapping, reporting, and statistical analysis of water resources, water supply, water quality, wildlands, agriculture, soils, forests, rangelands, fish habitat, wildlife habitat, cross-referencing state and federal hydrologic unit or watershed codes and names.

CALWATER version 2.2 is the third version of Calwater (after versions 1.2 and 2.0), and is a descendent of the 1:500,000-scale State Water Resources Control Board Basin Plan Maps drawn in the late 1970's.

Version 1.2 was completed in 1995 by Tierra Data Systems (Jim Kellog). Linework was captured by overlaying the Basin Plan Maps on 1:24,000-scale USGS quad sheets, redrawing and digitizing lines to match 1:24,000-scale watershed boundaries, and subdividing the 4th level Hydrologic Subareas (HSAs) into 5th level Super Planning Watersheds (SPWS) and 6th level Planning Watersheds (PWS).

Version 2.0 called for the removal of the 5th level Super Planning Watersheds and 6th level Planning Watersheds, introduction of the groundwater line around the Central and Salinas valleys, and was subject to an extensive cooperative planning and review effort by the Interagency California Watershed Mapping Committee (ICWMC), which includes the following agencies state and federal agencies with water resources, water quality, soils, forest, watershed, fish, and wildlife habitat responsibilities:

California Department of Water Resources (DWR)
California Department of Forestry and Fire Protection (CDF)

California Department of Fish and Game (DFG)
California State Water Resources Control Board (SWRCB)
USDA Forest Service (USFS) Pacific Southwest Region (R5)
USDA Natural Resources Conservation Service (NRCS)
USDI Geologic Survey (USGS)
USDI Bureau of Reclamation (USBR)
USDI Bureau of Land Management (BLM)
US Environmental Protection Agency (USEPA) Region IX
Stephen P. Teale Data Center (Teale)

These agencies plan to adopt a draft Memorandum of Understanding (MOU) titled "Regarding the Use and Maintenance of the California Watershed Map" (DWR 3/5/97) which has been prepared for the purpose of promoting the use, management, and maintenance of a common watershed map of California.

In Calwater version 2.2 the Super Planning and Planning Watersheds were reinstated and verified to properly nest withing the watershed hierarchy. All Super Planning Watershed and any missing Planning Watershed names were populated, and where suitable, watershed boundaries were adjusted to linework provided by the following National Forests:

Klamath
Lassen
Mendocino
Shasta Trinity
Six Rivers

VITAL STATISTICS:

Datum:	NAD 83
Projection:	Albers
Units:	Meters
1st Std. Parallel:	34 00 00 (34.0 degrees N)
2nd Std. Parallel:	40 30 00 (40.5 degrees N)
Longitude of Origin:	-120 00 00 (120.0 degrees W)
Latitude of Origin:	00 00 00 (0.0 degrees)
False Easting (X shift):	0
False Northing (Y shift):	-4,000,000
Source:	1:24,000 USGS Quad Maps
Source Media:	Paper
Source Projection:	Polyconic
Source Units:	Meters
Source Scale:	1:24,000
Capture Method:	Original digitizing by J. Kellogg and staff (Tierra Data Systems)
Conversion Software:	ARC/Info rev 7.2.1
Data Structure:	Vector
ARC/INFO Coverage Type:	Polygon, Line (Network)
ARC/INFO Precision:	Double

ARC/INFO Tolerances: Fuzzy tolerance - 2 meters, Dangle Length - .1 meters

Number of Features: 7022 polygons

Layer Size: 30.5 megabytes

Data Updated: September 1999

DATA DICTIONARY:

File Name: CALW22A.PAT

COL	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC
1	AREA	8	18	F	5
9	PERIMETER	8	18	F	5
17	CALW22A#	4	5	B	-
21	CALW22A-ID	4	5	B	-
25	IDNUM	12	12	C	-
37	HRC	2	2	C	-
39	HBPA	2	2	C	-
41	RBU	5	5	I	-
46	RBUA	6	6	I	-
52	RBUAS	7	7	I	-
59	RBUASP	9	9	I	-
68	RBUASPW	11	11	I	-
79	HR		2	2	I	-
81	RB		1	1	I	-
82	HU		2	2	I	-
84	HA		1	1	I	-
85	HSA	1	1	I	-
86	SPWS	2	2	I	-
88	PWS	2	2	I	-
90	HRNAME	35	35	C	-
125	RBNAME	35	35	C	-
160	HBPANAME	35	35	C	-
195	HUNAME	35	35	C	-
230	HANAME	35	35	C	-
265	HSANAME	35	35	C	-
300	SPWSNAME	35	35	C	-
335	PWSNAME	35	35	C	-
370	ACRES	4	12	F	0
374	CU	8	8	I	-
382	CUNAME	48	48	C	-
430	CU2	8	8	I	-
438	CU3	8	8	I	-
446	IDNUM_20	12	12	C	-
458	HUNAME_20	35	35	C	-
493	HANAME_20	35	35	C	-
528	HSANAME_20		35	35	C	-

IDNUM: ID NUMber of watershed (SWRCB/RWQCB)

HRC:	Hydrologic Region Code (DWR)
HBPA:	Hydrologic Basin Planning Area (SWRCB)
RBU:	Aggregate of HR,RB,HU
RBUA:	Aggregate of HR,RB,HU,HA
RBUAS:	Aggregate of HR,RB,HU,HA,HSA
RBUASP:	Aggregate of HR,RB,HU,HA,HSA,SPWS
RBUAPSW:	Aggregate of HR,RB,HU,HA,HSA,SPWS,PWS
HR:	Hydrologic Region (1->10)
RB:	Regional Water Qual. Cont. Board (1->9)
HU:	Hydrologic Unit (00->~80)
HA:	Hydrologic Area (0->9)
HSA:	Hydrologic Sub-Area (0->9)
SPWS:	Super Planning Watershed (00->~30)
PWS:	Planning Watershed (00->~15)
HRNAME:	Hydrologic Region Name
RBNAME:	Regional Water Qual. Cont. Board Name
HBPANAME:	Hydrologic Basin Planning Area Name
HUNAME:	Hydrologic Unit Name
HANAME:	Hydrologic Area Name
HSANAME:	Hydrologic Sub-Area Name
SPWSNAME:	Super Planning Watershed Name
PWSNAME:	Planning Watershed Name
ACRES:	Acreage of watershed polygon
CU:	Cataloging Unit (Fed. HUC), overlap #1
CUNAME:	Cataloging Unit name, overlapping CU #1
CU2:	Cataloging Unit, overlapping CU #2
CU3:	Cataloging Unit, overlapping CU #3
IDNUM_20:	Calwater 2.0 IDNUM (DWR dissolver)
HUNAME_20:	Calwater 2.0 HUNAME (DWR dissolver)
HANAME_20:	Calwater 2.0 HANAME (DWR dissolver)
HSANAME_20:	Calwater 2.0 HSANAME (DWR dissolver)

File Name: CALW22A.AAT

COL	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC
1	FNODE#	4	5	B	-
5	TNODE#	4	5	B	-
9	LPOLY#	4	5	B	-
13	RPOLY#	4	5	B	-
17	LENGTH	8	18	F	5
25	CALW22A#	4	5	B	-
29	CALW22A-ID	4	5	B	-
33	LEVEL	2	5	B	-

LEVEL: Highest level of difference between right and left side watersheds (e.g. 3 indicates different HA's)

Lookup Table of California Hydrologic Region Names and Codes:

Codes for Hydrologic Regions and other administrative entities are cross-referenced in the table below. Ten Hydrologic Regions are coded numerically by DWR, whereas there are nine Regional Water Quality Control Boards, with offices in twelve Hydrologic Basin Planning Areas (HBPA). DWR identifies three HRs in the Central Valley to SWRCB's one "Region", and SWRCB identifies three RWQCBs in DWR's one South Coast HR. The two-letter abbreviations SR and SB both refer to the Sacramento River basin. Other single-letter codes are used in DWR Bulletin 130-85 "Hydrologic Data 1985", and other DWR publications.

It should also be noted that the boundary between Regional Water Quality Control Board regions 4 (Los Angeles) and 8 (Santa Ana) follows the boundary between Los Angeles and Orange or San Bernardino Counties, not the hydrologic boundary. The San Bernardino County line splits the Santa Ana River HU (4481 and 4801), and the Orange County line splits the San Gabriel River HU (4405 and 4845).

Federal Hydrologic Unit Codes (4-digit HUC) Sub-Region codes and names are also provided. Note that some state designations map to more than one federal designation. More detailed HUC designations terminate with the 8-digit HUC, the Cataloging Unit (CU) (USGS 1986, Water Supply Paper 2294). Detailed, polygon-by-polygon lookup is also possible with the CU, CU2, CU3, etc. codes in the ARC/INFO Polygon Attribute Table above.

KEY to Table

HR: DWR Hydrologic Region (1->10)
RB: Regional Water Quality Control Board (1->9)
BC: DWR Basin Code (1-letter; Bulletin 130-85; Surface Water data)
AC: DWR Areal Code (1-letter; Areal Designation Map; Climate, Grd.Water)
HRC: DWR Hydrologic Region code (2-letter name abbreviation, var. pubs.)
HBPA: SWRCB Hydrologic Basin Planning Area (2-letter name abbreviation)
SUBR: USGS Hydrologic Unit Code (HUC) Sub-Region; incl. border states.

HR	RB	BC	AC	HRC	DWR HR Name	HBPA	SWRCB/RB Name	SUBR
1	1	F	F	NC	North Coast	NC	North Coast	1801,1710
2	2	E	E	SF	San Francisco Bay	SF	San Francisco Bay	1805
3	3	D	T	CC	Central Coast	CC	Central Coast	1806
4	4	Z	U	SC	South Coast	LA	Los Angeles	1807
5	5	A	A	SR	Sacramento River	SB	Sacramento Basin	1802
6	5	B	B	SJ	San Joaquin River	SJ	San Joaquin	1804
7	5	C	C	TL	Tulare Lake	TL	Tulare Lake	1803
8	6	G	G	NL	North Lahontan	NL	North Lahontan	1808,1604,1605
9	6	V	W	SL	South Lahontan	SL	South Lahontan	1809,1606
10	7	W	X	CR	Colorado River	CR	Colorado River	1810,1503
-	8	Y	Y	--	(not defined)	SA	Santa Ana	1807
-	9	X	Z	--	(not defined)	SD	San Diego	1807

HR SUBR Federal HUC Hydrologic Sub-Region Name (Remarks)
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1	1801	Klamath-Northern California Coastal (incl. upper Klamath, OR)
1	1710	Oregon-Washington Coastal (minor CA portion of OR drainages)
2	1805	San Francisco Bay
3	1806	Central California Coastal
4	1807	Southern California Coastal
5	1802	Sacramento
6	1804	San Joaquin
7	1803	Tulare-Buena Vista Lakes
8	1808	North Lahontan (incl. portions of NV basins draining into CA)
8	1604	Black Rock Desert-Humboldt (minor CA portion of NV basins)
8	1605	Central Lahontan (includes Tahoe basin and portions of NV)
8	1712	Oregon Closed Basins (minor CA portion near Goose Lake)
9	1809	Northern Mojave-Mono Lake (minor NV portions included)
9	1606	Central Nevada Desert Basins (minor CA portion)
10	1810	Southern Mojave-Salton Sea
10	1503	Lower Colorado (includes CA portion west of Colorado River)

IDNUM TO HUC CROSSWALK

Calwater maps fairly neatly to the federal Hydrologic Unit Codes (HUCS). Generally Calwater watersheds fit within HUCs, though there are some exceptions:
The IDNUM to HUC cross-reference was developed with the following rules:
For a given [state] Calwater watershed, overlapping [federal] Hydrologic Unit Codes (at the 8-digit Cataloging Unit [CU] level) are listed up to a maximum of 80% of the Calwater watershed OR three CUs, whichever comes first.

For example:
Where there is only one CU code listed for a given Calwater watershed code, that CU overlaps at least 80% of the Calwater watershed.

Where there are two CU codes (CU and CU2) listed for a given Calwater code (only 18 watersheds fit this criterion), the largest CU alone overlaps less than 80% of the Calwater watershed, but combining CU2 then provides overlap of at least 80% of the Calwater watershed.

Where there are three CU codes (CU, CU2, and CU3) listed for a given Calwater watershed (only 1 watershed fits this criterion), the largest 2 CUs together overlap less than 80% of the Calwater watershed; combining a third CU code produces additional overlap. Complete overlap statistics are left for calculation by the user.

If a watershed consists of multiple polygons (because it is split by the groundwater line, the state boundary, or it is comprised of multiple islands), the total area of the watershed (the sum of all

the polygons) is the value entered in the ACRES item. The individual polygons of a multi-polygon watershed all have the same watershed code. These cases are itemized below:

LEGITIMATE DUPLICATE CODES (MULTIPLE POLYGONS FOR A SINGLE WATERSHED):

Hydrologic Unit Level

Count	RBU	Condition
2	1102	Oregon Border Split
3	3316	Channel Islands Split
8	4406	Channel Islands Split
2	4481	LA/Santa Ana Regional Split
2	4845	LA/Santa Ana Regional Split
2	6542	Ground Water Line Split

Hydrologic Area Level

Count	RBU	Condition
3	4406.1	Channel Islands Split
2	4406.3	Channel Islands Split
6	4845.1	LA/Santa Ana Regional Split
2	4845.6	LA/Santa Ana Regional Split
2	6542.4	Ground Water Line Split
2	9609.4	Nevada Border Split

Hydrologic Subarea Level

Count	RBU	Condition
3	4406.10	Channel Islands Split
2	4406.30	Channel Islands Split
2	4408.13	Point Mugu Lagoon - 2 parts
6	4845.15	LA/Santa Ana Regional Split
2	4845.62	LA/Santa Ana Regional Split
2	5514.25	Ground Water Line Split
3	5518.11	Lake Shasta Split
2	6537.21	Lake McClure Split
2	6542.41	Ground Water Line Split
2	9609.42	Nevada Border Split

Super Planning Watershed Level

Count	RBU	Condition
3	4406.1000	Channel Islands Split
2	4406.3000	Channel Islands Split
2	4408.1300	Point Mugu Lagoon - 2 parts
6	4845.1500	LA/Santa Ana Regional Split
2	4845.6200	LA/Santa Ana Regional Split
2	5506.2003	Lake Shasta Split

2	5506.2005	Lake Shasta Split
4	5506.2008	Lake Shasta Split
2	5514.2500	Ground Water Line Split
2	5522.2404	Stony Gorge Reservoir Split
2	9609.4200	Nevada Border Split

Planning Watershed Level

Count	RBU	Condition
3	3309.600404	Ground Water Line Split
2	3309.700901	Ground Water Line Split
3	4406.100000	Channel Islands Split
2	4406.300000	Channel Islands Split
2	4408.130000	Point Mugu Lagoon - 2 parts
6	4845.150000	LA/Santa Ana Regional Split
2	4845.620000	LA/Santa Ana Regional Split
2	9609.420000	Nevada Border Split

DATA QUALITY ASSESSMENT:

The following are subjective comments regarding this data:

CALWATER boundaries were digitized on a 1:24,000-scale base and thus very accurately divide surface water features depicted on 1:100,000-scale Digital Line Graph hydrography. However, CALWATER delineations are primarily designed to be administrative reporting units, and the boundaries should not be used to define authoritative drainage area above a given point as a portion of their definition includes non-physical boundaries, particularly in valley floor and urbanized coastal regions. Attribute completeness is good. Compatibility with existing state and federal watershed delineations is good, except where explicitly different boundary configurations are applied.

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DOCUMENTATION DATES: September 1999